



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/838,138	04/20/2001	Thomas J. Drury	X-9332	9525

7590

11/29/2002

John S. Hale
Gipple & Hale
6665-A Old Dominion Drive
McLean, VA 22101

EXAMINER

ROCHE, LEANNA M

ART UNIT

PAPER NUMBER

1771

DATE MAILED: 11/29/2002

3

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/838,138

Applicant(s)

DRURY, THOMAS J.

Examiner

Leanna Roche

Art Unit

1771

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☒ Claim(s) 5 and 11 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities: In line 19, on page 4, of the specification, delete "from 25.0 L/min to 25.0 L/min" and insert --from 95.0 L/min to 25.0 L/min--, as disclosed on page 7 at line 18. Appropriate correction is required. ✓
2. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: Claim 7 states "a bubble point pressure of about 0.92 PSI", however, the specification only shows support for "a bubble point pressure of 0.026 PSI" (page 7 at line 14). Clarification is requested. ✓
3. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: Claim 18 states "a mean flow pore pressure ranging from about 0.30 PSI to about 0.40 PSI", however, the specification only shows support for "a mean flow pore pressure of 0.334 PSI" (page 4 at lines 17-18 and page 7 at lines 13-14). Clarification is requested. ✓
4. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: Claim 18 states "wet flow rate using water as a medium ranging from about 9.0 L/min to 20.0 L/min". However, the specification does not ✓

Art Unit: 1771

provide support for these particular endpoints because the specification states that the wet flow rate is "about 80.0 L/min to 7.0 L/min" (page 7 at line 18). The examiner requests that Applicant include the claimed endpoints into the teachings of the specification.

5. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: In Claim 19, Applicant refers to a "cleaning solvent flow through said roller". However, Applicant specification does not refer to a "cleaning solvent flow", but does disclose that the "average flow requirements" of "chemistry" are "reduced from 500-700 ml/minute to 120-180 ml/minute". See page 6, line 21- page 7, line 2. Clarification is requested.

Claim Objections

6. Claims 5 and 11 are objected to because of the following informalities: for clarification, please amend the phrase "average pore size" to read as either --average pore diameter-- or --average pore diameter size--, as disclosed on page 7 at lines 7-8. Appropriate correction is required.

Claim Rejections - 35 USC § 112

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Art Unit: 1771

8. Claims 7, 8 and 10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

9. Claim 7 is rejected as being indefinite because it is unclear if the polyvinyl acetal material alone has the claimed "bubble point pressure", or if the claimed "bubble point pressure" pertains to the entire body of the cleaning device, which may constitute other materials. Clarification is requested.

10. Claim 8 is considered indefinite because it is unclear how the thickness can be 15mm if the outside diameter is 60mm and the inside diameter is 30mm. It would appear that the thickness of the roller would inherently have to be 30mm. Clarification is required.

11. Claim 10 recites the limitation "the cleaning process" in line 5 of the claim. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. Claims 1, 2, 5-7 and 9-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tomita et al. (USPN 4566911) in view of Rosenblatt (USPN 4098728) and Cercone et al. (USPN 6027573).

Art Unit: 1771

Tomita teaches a cleaning roll for metal or glass materials, the roll being comprised of a polyvinyl acetal porous elastic material having an average pore opening of 10 to 200 microns (Abstract). The cleaning article of Tomita may be shaped as a roller with a flat surface (Claim 2), which reads on a roller having a smooth outer surface. Tomita does not disclose a skin layer. This reads on Applicant's Claim 14 because the term "substantially" is a broad term, and the absence of any indication of skin layer in Tomita would read on something that is "substantially skinless".

Tomita does not specifically teach "uniform pore size throughout the polyvinyl acetal material. Rosenblatt, however, teaches a porous polyvinyl acetal sponge material having controlled uniform pore size and uniform pore distribution, as well as being a smooth, lint free, non-abrasive, compressible and flexible sponge. It would have been obvious to the skilled artisan at the time this invention was made to combine the teachings of Tomita and Rosenblatt because it is known in the art that Tomita is suitable for use in cleaning semiconductor wafers (Cerccone, Column 1, lines 22-31), and the teachings of Rosenblatt are suitable for use in making a semiconductor cleaning sponge (Cerccone, Column 2, line 41 - Column 3 line 14). Additionally, it would have been obvious to the skilled artisan to use a polyvinyl acetal material having uniform pore size motivated by the desire to produce a semiconductor cleaning device which is smooth, lint free, non-abrasive, compressible and flexible.

While Tomita discloses pore diameters from 10 to 200 microns which falls within Applicant's ranges, Tomita does not specifically disclose 90% of its pore diameters ranging from about 7 to 40 microns, and/or an average pore size of about 20 microns,

Art Unit: 1771

and/or 95% of its pore diameters below 40 microns, and/or a mean flow pore diameter (which the examiner has interpreted as mean pore diameter) of about 20 microns.

However, it would have been obvious to the skilled artisan at the time this invention was made to optimize the size of the pore diameters of the polyvinyl acetal material, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. See *In re Aller*, 105 USPQ 233. In the present case, it would have been obvious to make a porous polyvinyl acetal material with pore diameters within Applicant's claimed range because the smaller pore sizes claimed by Applicant would result in less coarse porous material surfaces which would aid in reducing the abrasiveness of the porous material (Tomita Column 2, lines 25-30), and uniform pore diameters would aid in producing lint free, compressible, resilient, smooth, non-abrasive porous material (Rosenblatt).

Neither Tomita nor Rosenblatt disclose the values of the bubble point pressure, the mean flow pore pressure, the wet flow rate using water, and the cleaning solvent rate of the polyvinyl acetal cleaning device. Additionally, neither Tomita nor Rosenblatt disclose that the fluid flow through rate does not distort the roller. However, it appears that the porous polyvinyl acetal cleaning device of Tomita in view of Rosenblatt is substantially identical to the presently claimed cleaning device made of porous polyvinyl acetal material, because both are comprised of the same chemical material, both may have uniform pores, both may obviously have pores with the same diameter, and both may be used for the same purpose. Thus, it is believed by the examiner that cleaning device of Tomita in view of Rosenblatt inherently possesses a bubble point pressure, a

Art Unit: 1771

mean flow pore pressure, a wet flow rate using water, and a cleaning solvent rate within Applicant's presently claimed ranges, as well as a fluid flow through rate that does not distort the roller. Additionally, values for the bubble point pressure, the mean flow pore pressure, the wet flow rate using water, the cleaning solvent rate, and the non-distorting fluid flow through rate would have obviously been present once the cleaning device of Tomita in view of Rosenblatt was provided.

14. Claims 1-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bahten (USPN 6076662) in view of Rosenblatt (USPN 4098728) and Cercone et al. (USPN 6027573).

Bahten teaches a cleaning device for semiconductors wafers, the cleaning device being comprised of a polyvinyl acetal porous elastic material having an average pore size 10 to 200 microns (Column 4, lines 11-19). The cleaning device of Bahten may be shaped as a roller which may have a smooth surface, or may be shaped as a pad or a disk (Column 3, lines 44-53). The roller of Bahten may have an outer diameter of about 60mm and an inner diameter of about 32mm (Column 11, lines 42-47). Bahten does not disclose a skin layer. This reads on Applicant's Claim 14 because the term "substantially" is a broad term, and the absence of any indication of skin layer would read on something that is "substantially skinless".

Bahten does not specifically teach "uniform pore size throughout the polyvinyl acetal material. Rosenblatt, however, teaches a porous polyvinyl acetal sponge material having controlled uniform pore size and uniform pore distribution, as well as

Art Unit: 1771

being a smooth, lint free, non-abrasive, compressible and flexible sponge. It would have been obvious to the skilled artisan at the time this invention was made to combine the teachings of Bahten and Rosenblatt because it is known in the art that the teachings of Rosenblatt are suitable for use in making a semiconductor cleaning sponge (USPN 6027573, Column 2, line 41 - Column 3 line 14). Additionally, it would have been obvious to the skilled artisan to use a polyvinyl acetal material having uniform pore size motivated by the desire to produce a semiconductor cleaning device which is smooth, lint free, non-abrasive, compressible and flexible.

While Bahten discloses pore diameters from 10 to 200 microns which fall within Applicant's ranges, Bahten does not specifically disclose 90% of its pore diameters ranging from about 7 to 40 microns, and/or an average pore size of about 20 microns, and/or 95% of its pore diameters below 40 microns, and/or a mean flow pore diameter (which the examiner has interpreted to be mean pore diameter) of about 20 microns. However, it would have been obvious to the skilled artisan at the time this invention was made to optimize the size of the pore diameters of the polyvinyl acetal material, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. See *In re Aller*, 105 USPQ 233. In the present case, it would have been obvious to make a porous polyvinyl acetal material with pore diameters within Applicant's claimed range because the smaller pore sizes claimed by Applicant would result in less coarse porous material surfaces which would aid in reducing the abrasiveness of the porous material

Art Unit: 1771

(Bahten), and uniform pore diameters aid in producing lint free, compressible, resilient, smooth, non-abrasive porous material (Rosenblatt).

Neither Bahten nor Rosenblatt disclose the values of the bubble point pressure, the mean flow pore pressure, the wet flow rate using water, and the cleaning solvent rate of the polyvinyl acetal cleaning device. Additionally, neither Bahten nor Rosenblatt disclose that the fluid flow through rate does not distort the roller. However, it appears that the porous polyvinyl acetal cleaning device of Bahten in view of Rosenblatt is substantially identical to the presently claimed cleaning device made of porous polyvinyl acetal material, because both are comprised of the same chemical material, both may have uniform pores, both may obviously have pores with the same diameter, and both may be used for the same purpose. Thus, it is believed by the examiner that cleaning device of Bahten in view of Rosenblatt inherently possesses a bubble point pressure, a mean flow pore pressure, a wet flow rate using water, and a cleaning solvent rate within Applicant's presently claimed ranges, as well as a fluid flow through rate that does not distort the roller. Additionally, values for the bubble point pressure, the mean flow pore pressure, the wet flow rate using water, the cleaning solvent rate, and the non-distorting fluid flow through rate would have obviously been present once the cleaning device of Bahten in view of Rosenblatt was provided.

Conclusion

15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Nagasaka et al. (USPN 6395382) teaches a polyvinyl acetal

Art Unit: 1771

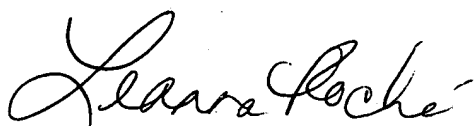
sponge having an average pore diameter of 10 to 160 microns. Cercone et al. (USPN 5979469) teaches that it is well known in the art that synthetic polyvinyl acetal sponges may be used for both cleaning rollers for semiconductors and as synthetic sponges for medical applications such as bandages and surgical sponges. EP 0937539 teaches a cleaning sponge roller of porous polyvinyl acetal having pore diameters from 40 to 400 microns.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leanna Roche whose telephone number is 703-308-6549. The examiner can normally be reached on Monday through Friday from 8:30 am to 6:00 pm (with alternate Mondays off).


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Terrel Morris can be reached on 703-308-2414. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.



lmr

November 19, 2002



TERREL MORRIS
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700